

REMARKS

This Amendment and Response to Non-Final Office Action is being submitted in response to the non-final Office Action mailed February 8, 2007. Claims 1-35 are pending in the Application.

Claim 28 is rejected under 35 U.S.C. 102(e) as being anticipated by Cardwell et al. (U.S. Patent Application Publication No. 2002/0036988). Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Ramamurthy et al. ("Optimizing Amplifier Placements in a Multiwavelength Optical LAN/MAN: The Unequally Powered Wavelengths Case," IEEE/ACM Transactions on Networking, Vol. 6, No. 6, December 1998, pp. 755-767). Claims 1-3, 7-10, 14, 32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. (U.S. Patent No. 6,304,347). Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. as applied to Claim 32, and further in view of Sharma et al. (U.S. Patent No. 6,046,833). Claims 4-6, 11-13, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. as applied to Claims 1, 8, and 32, and further in view of Ramamurthy et al. Claims 15-27 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. and Ramamurthy et al.

In response to these rejections, Claims 1, 8, 15, 28, 29, and 32 have been amended to further clarify the subject matter which Applicant regards as the invention, without prejudice or disclaimer to continued examination on the merits. These amendments are fully supported in the Specification, Drawings, and Claims of the Application and no new matter has been added. Based upon the amendments, reconsideration of the Application is respectfully requested in view of the following remarks.

Rejection of Claim 28 Under 35 U.S.C. 102(e) – Cardwell et al.:

Claim 28 is rejected under 35 U.S.C. 102(e) as being anticipated by Cardwell et al. (U.S. Patent Application Publication No. 2002/0036988).

Examiner states that Claim 28 does not recite any further specific details regarding how a subsequent set of placement configurations is “constrained by” the initial placement.¹ Applicants have added this limitation to Claim 28. Applicants respectfully submit that Cardwell et al. do not disclose means for forming a subsequent set of optical amplifier placement configurations in accord with and constrained by the initial placement of the selections means as is now recited in Claim 28.

Additionally, Applicants have added a new element of design means for selecting a plurality of optical services within the optical network, and limited the optical network to a mesh, ring, or combination thereof. Cardwell et al. do not disclose the design means and Cardwell et al. focuses solely on rings, not mesh and ring/mesh combination topologies.

Thirdly, Applicants have further refined the quality of service to include power level of every channel in the channel map and one or more of optical signal to noise ratio, bit error rate, and combinations thereof. Applicants respectfully submit that Cardwell et al. only disclose loss, and not bit error rate and/or optical signal to noise ratio.²

Specifically, Applicants have amended Claim 28 to recite:

28. (Currently amended): A network design tool for a wavelength division multiplexed optical network in which each optical node is capable of receiving a plurality of optical amplifiers, comprising:

design means for selecting a plurality of optical services within the optical network, wherein the plurality optical services comprise a

¹ See Non-Final OA , February 8, 2007, p. 4

² US2002/0036988A1, p. 6 ¶[0068] and p. 7 ¶[0076]

plurality of channels, wherein each of the plurality of channels comprises a source node and a destination node, and wherein the optical network is configured in a mesh, ring, or combination thereof topology;

selection means for placing at least one optical amplifier to form an initial placement in accord with an optical power criteria;

wherein the initial placement is constrained by a node loss algorithm wherein it is determined if a given node has an internal node loss for one or more ***of the plurality of*** channels that exceeds a predetermined level, and one or more of a span loss algorithm wherein it is determined if a given span has an internal span loss for one or more ***of the plurality of*** channels that exceeds a predetermined level, the span loss algorithm taking into account the internal span loss of a given fiber and one or more transmitter/receiver to output port/input port equivalent losses at one or more end nodes of the span, a path loss algorithm wherein the span loss algorithm is extended to include non-adjacent nodes, an aggregate loss algorithm wherein it is determined if one or more nodes have an aggregate span and band loss for one or more ***of the plurality of*** channels that exceeds a predetermined level, and a sequential path search algorithm wherein the power characteristics of one or more ***of the plurality of*** channels are analyzed from ***the source node to the drop node***;

means for forming a subsequent set of optical amplifier placement configurations in accord with and constrained by the initial placement of the selections means, ***wherein constrained by the initial placement of selections means comprises one of analyzing all possible configurations having the same number of amplifiers as the initial placement and varying losses of the spans and nodes from the initial placement by a predetermined percentage to identify other possible configurations***; and

quality of service means to analyze the quality of service of each amplifier placement configuration, ***wherein the quality of service comprises power level of every channel in the channel map and one or more of optical signal to noise ratio, bit error rate, and combination thereof***.

Therefore, Applicant submits that, because Claim 28 now recites elements/limitations not disclosed by Cardwell et al., the rejection of Claim 28 under 35 U.S.C. 102(e) as being anticipated by Cardwell et al. has now been overcome and respectfully requests that this rejection be withdrawn.

Rejection of Claims 29-31 Under 35 U.S.C. 103(a) – Cardwell et al. and Ramamurthy et al.:

Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Ramamurthy et al. (“Optimizing Amplifier Placements in a Multiwavelength Optical LAN/MAN: The Unequally Powered Wavelengths Case,” IEEE/ACM Transactions on Networking, Vol. 6, No. 6, December 1998, pp. 755-767).

Applicants have amended Claim 29 with the limitations of the optical network is in a mesh, ring, or mesh/ring configuration and the quality of service to include power level of every channel in the channel map and one or more of optical signal to noise ratio, bit error rate, and combinations thereof.

The above arguments with regard to Claim 28 apply with equal force here. Therefore, Applicant submits that the rejection of Claims 29-31 under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Ramamurthy et al. has now been overcome and respectfully requests that this rejection be withdrawn.

Rejection of Claims 1-3, 7-10, 14, 32, and 34 Under 35 U.S.C. 103(a) – Cardwell et al. and Beine et al.:

Claims 1-3, 7-10, 14, 32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. (U.S. Patent No. 6,304,347).

Applicants have amended Claims 1 and 8 by adding a selecting step to select optical services where the optical nodes are in a mesh, ring, or mesh/ring configuration, and to define the quality of service to include power level of every channel in the channel map and one or more of optical signal to noise ratio, bit error rate, and combinations thereof.

The above arguments presented herein apply with equal force here. Therefore, Applicant submits that the rejection of Claims 1-3, 7-10, 14, 32, and 34 under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. has now been overcome and respectfully requests that this rejection be withdrawn.

Rejection of Claim 33 Under 35 U.S.C. 103(a) – Cardwell et al. and Sharma et al.:

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. as applied to Claim 32, and further in view of Sharma et al. (U.S. Patent No. 6,046,833).

The above arguments with regard to Claim 28 apply with equal force here. Therefore, Applicant submits that the rejection of Claim 33 under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. as applied to Claim 32, and further in view of Sharma et al., has now been overcome and respectfully requests that this rejection be withdrawn.

Rejection of Claims 4-6, 11-13, and 35 Under 35 U.S.C. 103(a) – Cardwell et al., Beine et al., and Ramamurthy et al.:

Claims 4-6, 11-13, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. as applied to Claims 1, 8, and 32, and further in view of Ramamurthy et al.

The above arguments presented herein apply with equal force here. Therefore, Applicant submits that the rejection of Claims 4-6, 11-13, and 35 under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. as applied to Claims 1, 8, and 32, and further in view of Ramamurthy et al., has now been overcome and respectfully requests that this rejection be withdrawn.

Rejection of Claims 15-27 Under 35 U.S.C. 103(a) – Cardwell et al., Beine et al., and Ramamurthy et al.:

Finally, Claims 15-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. and Ramamurthy et al.

Applicants have amended Claim 15 with the limitations of the optical network is in a mesh, ring, or mesh/ring configuration and the quality of service to include power level of every channel in the channel map and one or more of optical signal to noise ratio, bit error rate, and combinations thereof.

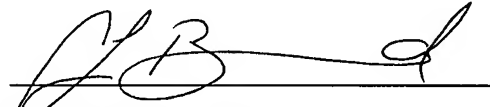
The above arguments presented herein apply with equal force here. Therefore, Applicant submits that the rejection of Claims 15-27 under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. and Ramamurthy et al. has now been overcome and respectfully requests that this rejection be withdrawn.

CONCLUSION

Applicant would like to thank Examiner for the attention and consideration accorded the present Application. Should Examiner determine that any further action is necessary to place the Application in condition for allowance, Examiner is encouraged to contact undersigned Counsel at the telephone number, facsimile number, address, or email address provided below. It is not believed that any fees for additional claims, extensions of time, or the like are required beyond those that may otherwise be indicated in the documents accompanying this paper. However, if such additional fees are required, Examiner is encouraged to notify undersigned Counsel at Examiner's earliest convenience.

Respectfully submitted,

Date: April 20, 2007



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EXPRESS MAIL CERTIFICATE

Express Mail No.: - EM 046111008 US

Date of Deposit: - April 20, 2007

Type of Document(s): - Transmittal Form (PTO/SB/21)
- Amendment and Response to Non-Final Office Action
(19 pages)
- Postcard Receipt

Application No.: - 10/037,085

Filed: - December 20, 2001

Applicant(s): - Kenneth M. MAXHAM

Title: - SYSTEM AND METHOD FOR SELECTING THE
PLACEMENT OF OPTICAL AMPLIFIERS IN
AN OPTICAL NETWORK

Examiner: - Christina Y. Leung

Art Unit: - 2613

Attorney Docket No.: - 10.0882

I hereby certify that the above-referenced documents are being/have been deposited with the United States Postal Service "Express Mail Post Office to Addressee" in accordance with 37 CFR 1.10 on the above-referenced date and are being/have been addressed to: **Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 USA.**

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